

## MINIATURE AIR COMPRESSOR

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to an air compressor, and more particularly to a miniature air compressor that can provide a stable compressed air current.

#### 2. Description of Related Art

A miniature air compressor usually used in art designing for providing compressed air to an air gun for equally spraying paint. However, almost all the conventional small compressor has a complicated structure and has a piston that may not be smoothly operated and provides an unstable compressed air current.

The present invention has arisen to mitigate and/or obviate the disadvantages of the miniature air compressor.

#### 15 SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an improved miniature air compressor that can provide a stable compressed air current.

To achieve the objective, the miniature air compressor in accordance with the present invention comprises a motor having a shaft for driving a crank. A cylinder has an open end allowing a second end of the crank extending into the cylinder for compressing the air and a close end opposite to the open end of the cylinder. The cylinder has an

inlet and an outlet respectively defined in the close end thereof and extending to communicate with an inner periphery of the cylinder. A cover longitudinally mounted to the close end of the cylinder. An input passage and an output passage are respectively defined in the cover.

5 The input passage and the output passage respectively communicate with the inlet and the outlet of the cylinder. A valve sheet secured between the close end of the cylinder and the cover. The valve selectively closes the outlet in the cylinder and the input passage in the cover.

10 Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a perspective view of a miniature air compressor in  
15 accordance with the present invention;

Fig. 2 is an exploded perspective view of the miniature air compressor in Fig. 1;

Fig. 3 is a partially enlarged perspective view in Fig. 2;

Fig. 4 is an operational plan view of the miniature air  
20 compressor in Fig. 1 for showing the air flowing into a cylinder of the present invention; and

Fig. 5 is an operational plan view of the miniature air compressor in Fig. 1 for showing the air in the cylinder being

compressed and outputted.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Figs. 1-3, a miniature air compressor in accordance with the present invention comprises a 5 motor (10), a transmission device (20) pivotally connected to the motor (10), a bracket (30) securely mounted to the motor (10), a cylinder (40) secured on the bracket (30) and a cover (50) longitudinally mounted to the cylinder (40).

The motor (10) includes a shaft (11) longitudinally extending 10 therefrom. A base member (16) is provided to support the motor (10) and multiple absorbers (15) are mounted between the base member (16) and the motor (10) for absorbing the vibration and reducing the noise from the motor (10).

The transmission device (20) includes a connector (22) 15 eccentrically and securely mounted to a free end of the shaft (11). The connector (22) includes a stub (23) perpendicularly extending therefrom opposite to the shaft (11) of the motor (10). A crank (25) is pivotally mounted to the stub (23) and is perpendicular relative to the shaft (11). The crank (25) includes a first end and a second end 20 opposite to each other. A bearing (26) is mounted in the first end of the crank (25) and the stub (23) of the connector (22) is securely received in the bearing (26). A resilient valve (27) is longitudinally secured on the second end of the crank (25) by a fastener (28) and reciprocally in

the cylinder (40) for compressed air in the cylinder (40).

The bracket (30) includes a through hole (31) defined therein for the cylinder (40) laterally extending through the bracket (30).

The cylinder (40) has an open end allowing the second end of 5 the crank (25) extending into the cylinder (40) and a close end facing the cover (50). An outlet (42) and an inlet (43) are respectively defined in the close end of the cylinder (40) and each extending to communicate with an inner periphery of the cylinder (40). A first inclined stopper (41) extends from the close end, into the inlet (43) and 10 facing the cover (50). A valve sheet (44) abuts an outer periphery of the cylinder (40) for covering the inlet (43) and the outlet (42). The valve sheet (44) includes a first valve (46) and a second valve (45) respectively corresponding to the inlet (43) and the outlet (42). The first valve (46) selectively wiggled into the inlet (43) and abuts the first 15 inclined stopper (41) to prevent the first valve (46) from being overly wiggled, and the second valve (45) selectively closes the outlet (42) when the crank (25) backward moved relative to the close end of the cylinder (40).

The cover (50) is securely and airtightly mounted to the close 20 end of the cylinder (40) for holding the valve sheet (44) in place. The cover (50) includes an inlet passage (53) defined therein and corresponding to the first valve (46), and an outlet passage (52) defined in the cover (50) and corresponding to the second valve (45). The first

valve (46) selectively closes the inlet passage (53) when the crank (25) is moved toward the cover (50). A second inclined stopper (51) extending from the cover (50) into the outlet passage (52). The second valve (45) is wiggled into the outlet passage (52) in the cover (50) to 5 open the outlet (42) in the close end of the cylinder (40) and abuts the second inclined stopper (51) to prevent the second valve (45) from being overly wiggled in the outlet passage (52) when the crank (25) moved toward the cover (50). The cover (50) includes an input joint (54) and an outlet joint (55) laterally extending therefrom. The input 10 joint (54) and the output joint (55) are respectively connected to a hose (not numbered) for easily operating the miniature air compressor in accordance with the present invention.

To operate the miniature air compressor of the present invention, the shaft (11) is rotated to drive the connector (22) and the crank (25) 15 to make the second end and the resilient valve (27) reciprocally moved in the cylinder (40) for compressing the air in the cylinder (40). With reference to Fig. 4, when the second end of the crank (25) being backward moved relative to the close end of the cylinder (40), the first valve (46) is wiggled into the inlet (43) in the close end of the cylinder 20 (40) so that the input passage (53) communicates with the cylinder (40) via the inlet (43), and the second valve (45) is securely abut the close end of the cylinder (40) to close the outlet (42) so that the compressed air should not flow back to the cylinder (40). Consequently, the air is

sucked into the cylinder (40). With reference to Fig. 5, when the second end of the crank (25) being moved toward the close end of the cylinder (40), the first valve (46) securely abut the cover (50) to close the input passage (53) in the cover (50) and the second valve (45) is wiggled into 5 the output passage (52) to open the outlet (42) in the close end of the cylinder (40). Consequently, the compressed air is outputted via the outlet (42) in the close end of the cylinder (40), the output passage (52) in the cover (50) and the output joint (55) of the cover (50).

Although the invention has been explained in relation to its 10 preferred embodiment, it is to be understood that many other possible modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.